UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,622	12/02/2003	Stefan Assmann	P03,0479	4948

7590 12/09/2008

SCHIFF HARDIN & WAITE
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606

EXAMINER	
MEHTA, PARIKHA SOLANKI	
ART UNIT	PAPER NUMBER
3737	

MAIL DATE	DELIVERY MODE
12/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/725,622	ASSMANN ET AL.	
	Examiner	Art Unit	
	PARIKHA S. MEHTA	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 2, 4, 5 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin (US Patent No. 4,918,386), hereinafter Dumoulin ('386), of record, in view of Dumoulin (US Patent No. 5,133,357), hereinafter Dumoulin ('357) and Kimmel (US Patent No. 6,031,935), hereinafter Kimmel ('935).

Regarding claims 1, 2, 5, 7, 11 and 12, Dumoulin ('386) teaches a system and method of simultaneously acquiring an anatomical image series and a speed-resolved image series of vasculature (col. 1 lines 47-51) (i.e., "a selected anatomical region encompassing moving tissue"), wherein the anatomical and speed-resolved image datasets have a time correspondence (Abstract). Dumoulin ('386) further teaches means and steps for reconstructing, integrating and displaying the anatomical and speed-resolved image series (col. 10 lines 32-44, Fig. 4b).

Dumoulin ('386) does not teach the acquisition and display of an overview image, integration of the anatomical and speed-resolved image series using only the time correspondence, or segmentation of the data corresponding to the moving region either during or immediately after image acquisition.

In the same field of endeavor, Dumoulin ('357) teaches a method and system for magnetic resonance imaging including means and steps for acquiring an localizer (i.e., "overview") image for the

purpose of confirming that a desired target appears in the image prior to performing the full scan (col. 10 lines 20-34). It would have been obvious to one of ordinary skill in the art to have modified the system and method of Dumoulin ('386) to include the means and steps for acquiring and displaying an overview image as taught by Dumoulin ('357), in view of the teachings of Dumoulin ('357).

Neither Dumoulin ('357) nor Dumoulin ('386) teach segmentation of the image data corresponding to the moving region either during or immediately after image acquisition.

In the same field of endeavor, Kimmel ('935) teaches a method and system for automatically segmenting, in image space, MR cardiac image data for the purpose of enhancing an anatomical landmark of interest, such as the left ventricle (Abstract, col. 3 lines 38-50) and manually identifying a moving region (claim 1), wherein the method is capable of being performed quickly (col. 3 lines 21-23). It would have been obvious to one of ordinary skill in the art to have modified Dumoulin ('386) and Dumoulin ('357) to further include the image segmentation means and steps of Kimmel ('935), in view of the teachings of Kimmel ('935) in order to better highlight the anatomical region of interest in the resulting image. It would have been further obvious to a skilled artisan to have performed the segmentation step immediately after data acquisition in order to diagnose and treat the patient without undue delay.

Neither Dumoulin ('357), Dumoulin ('386) nor Kimmel ('935) teach that the anatomical and speed-resolved image series are integrated using only their time correspondence. Dumoulin ('386) only generally teaches the merging of the anatomical and speed-resolved image data after Fourier transformation (col. 10 lines 16-35), i.e. in the time domain. However, it would have been obvious to a skilled artisan at the time of invention to have correlated the two series by time correspondence, particularly in the context of angiography and/or cardiac imaging as taught by all three references, as data merged from differing points within the cardiac cycle is of little clinical value. For instance, the integration of flow data during systole has no meaningful relevance to stationary data of the ventricle during diastole.

Regarding claim 4, Dumoulin ('386) teaches color coding images in the speed resolved series (col. 10 lines 35-42).

Regarding claims 8-10, Dumoulin ('357) teaches acquisition of data over a plurality of cardiac cycles (col. 8 lines 38-52). Applicant has not disclosed that the acquisition frequency of approximately 20 images per movement cycle solves a particular problem or presents a patentable advantage over the prior art; accordingly, it would have been nothing more than an obvious matter of design choice for a skilled artisan to have performed the reference method with an acquisition frequency of approximately 20 images per cycle.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin ('357), Dumoulin ('386) and Kimmel ('935) as applied to claim 5 above, and further in view of Dumoulin (US Patent No. 5,233,298), hereinafter Dumoulin ('298). Neither Dumoulin ('357), Dumoulin ('386) nor Kimmel ('935) teach the display of the anatomical image series and speed resolved image series as a movie. In the same field of endeavor, Dumoulin ('298) teaches a method of cardiac MR imaging including steps for continuously displaying successive images of a same anatomical region as a cine (i.e. "movie") display, in order to visualize the change in flow velocity over time. It would have been obvious to a skilled artisan at the time of invention to have modified to the combined method of Dumoulin ('357), Dumoulin ('386) and Kimmel ('935) to further include the cine steps of Dumoulin ('298), in view of the teachings of Dumoulin ('298).

Response to Arguments

5. Applicant's arguments with respect to claims 1, 2 and 4-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/
Supervisory Patent Examiner, Art Unit 3737

/Parikha S Mehta/
Examiner, Art Unit 3737